

BAA DAAH01-02-R-RB04

High Efficiency Distributed Lighting
HEDLight

Proposer Information Pamphlet (PIP)

SECTION I: Broad Agency Announcement
(BAA) DAAH01-02-R-RB04– High Efficiency
Distributed Lighting

SECTION II: Proposer Information

COORDINATING POC:

U.S. Army Aviation and Missile Command
ATTN: AMSAM-AC-RD-AY/Ms. Adina B. Peyton
Building 5400, West Entrance
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SECTION I:

BROAD AGENCY ANNOUNCEMENT

(BAA) DAAH01-02-R-RB04– HIGH EFFICIENCY DISTRIBUTED LIGHTING

HIGH EFFICIENCY DISTRIBUTED LIGHTING

SOL: BAA DAAH01-02-R-RB04, DUE 12 November 2002
POC: AMCOM
FAX: (256) 876-7600
WEB: <http://www.darpa.mil/ato/solicit.htm>.
E-MAIL: hedlight@dpo.redstone.army.mil

PROGRAM OBJECTIVES AND DESCRIPTION

DARPA's Advanced Technology Office (ATO) is soliciting proposals through AMCOM for innovative concepts relating to the development of High Efficiency Distributed Lighting (HED-Light) including high efficiency full spectrum light sources, coupling optics, optical-fiber-luminaires, and integrated fiber-illuminators. The program objective is to enable significant reductions in platform vulnerability through the use of remote source lighting, particularly on Naval warships, with a secondary emphasis on enabling improved visual acuity of the warfighter. The technical objective of the program is the demonstration of integrated high efficiency distributed lighting fiber-illuminators characterized by the following series of Integrated Fiber-Illuminator Properties and Objectives: Electrical Efficiency (LPW): 50 minimum, 70 goal; Mass Efficiency (lumens per gm): 2 minimum, 5 goal; Output (lumens): 1000-5000; Color Point: 5700-6500 K CCT; Spectrum: D57-D65, full spectrum, white; Luminaire: fiber-integrated.

To achieve this objective, offerors should emphasize illumination system or subsystem concepts that may contain high technical risk but if enabled would have commensurate high performance payoff. Technical objective goals for the illumination subsystems are described in the Proposer Information Pamphlet, which is available at Internet sites referenced elsewhere in this document.

Offerors are invited to submit proposals to one or more of the subsystem and integrated illuminator topic areas described below. Offerors proposing to multiple areas should submit independent proposals to each area. Where synergies between topic areas of work would provide greater value to the government, these synergies and their consequent cost or risk mitigations should be called out in the respective proposals.

The first phase of the effort proposed (base) should support the technical feasibility of the concept. Offerors should propose follow-on phases leading toward technology development. Based upon the success of the base efforts, a subset of the selected proposals may have options exercised to initiate the technology development.

The BAA and Proposer's Information Pamphlet constitute the entire solicitation for this effort. No additional information is available, nor will a formal request for proposal, or other solicitation, regarding this research and development effort be issued. Requests for such information will be disregarded.

TECHNICAL TOPIC AREAS

(1) Full Spectrum Light Sources, (2) Optical Coupling (3) Optical-Fiber-Luminaires, (4) Integrated Fiber-Illuminators.

PROGRAM SCOPE AND FUNDING

As much as \$5M in FY 2003, \$6M in FY 2004, and \$5M in FY 2005 may be available to fund efforts under this BAA. Multiple awards during FY 2003 are anticipated.

GENERAL INFORMATION

Proposers must obtain a pamphlet entitled "BAA DAAH01-02-R-RB04 HEDLight" (PIP) which provides further information on the above areas of interest, the submission, evaluation and funding processes, proposal formats, submission dates for proposals, and other general information. This pamphlet may be obtained from the World Wide Web (WWW) at URL <http://www.darpa.mil/ato/solicit.htm>, or by fax or electronic mail from the Administrative Contact below. Requests should be sent to the administrative contact given below. Proposals not meeting the format described in the pamphlet may not be reviewed. Proposers must submit an original, five copies, and an electronic copy of the proposal to mailing address provided below. This notice, in conjunction with the BAA DAAH01-02-R-RB04 Proposer Information Pamphlet, constitutes the total BAA. No other formal solicitation regarding this announcement will be issued and requests for such items will be disregarded.

The Government reserves the right to select for award all, some, portions of, or none of the proposals received. All responsible sources capable of satisfying the Government's needs may submit a proposal. Historically Black Colleges and Universities (HBCUs) and Minority Institutions (MIs) are encouraged to submit proposals and join others in submitting proposals; however, no portion of this BAA will be set aside for HBCU and MI participation due to the impracticality of reserving discrete or severable areas of research in the technologies sought.

All administrative correspondences and questions on this solicitation, including requests for information on how to submit a proposal to this BAA, should be directed to the administrative contact below; e-mail is preferred. AMCOM intends to use electronic mail, WWW, and/or fax for correspondence regarding BAA DAAH01-02-R-RB04. Proposals may not be submitted by fax or electronically; any so sent will be disregarded.

EVALUATION CRITERIA

The evaluation of proposals will be accomplished through a technical review of each proposal using the following criteria. The first three criteria are of equal and primary importance; the remaining criteria are listed in descending order of importance: (1) Overall scientific and technical merit, (2) Relevance to achieving the technical goals of the HEDLight program, (3) Approach to Technology Transition, (4) Offeror's Capabilities and Related Experience, and (5) Cost Realism.

The PIP and other information related to this announcement may be retrieved via the WWW at URL <http://www.darpa.mil/ato/solicit.htm>.

<u>Administrative Contact:</u>	Ms. Adina Petyon Phone: (256) 842-7408 ; Fax: (256) 876-7600 (Addressed to: Ms. Peyton BAA DAAH01-02-R-RB04), Electronic Mail: hedlight@dpo.redstone.army.mil
<u>AMCOM Technical POC:</u>	Ms. Barbara Robertson brobertson@dpo.redstone.army.mil
<u>Address for Proposals:</u>	U.S. Army Aviation and Missile Command ATTN: AMSAM-AC-RD-AY/Ms. Adina B. Peyton Building 5400, West Entrance Redstone Arsenal, Alabama 35898-5280

SECTION II: PROPOSER INFORMATION

HIGH EFFICIENCY DISTRIBUTED LIGHTING

SOL: BAA DAAH01-02-R-RB04, DUE 12 November 2002
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PROGRAM OBJECTIVES AND DESCRIPTION

DARPA's Advanced Technology Office (ATO) is soliciting proposals through AMCOM for innovative concepts relating to the development of High Efficiency Distributed Lighting (HED-Light) including high efficiency full spectrum light sources, coupling optics, optical-fiber-luminaires, and integrated fiber-illuminators. The program objective is to enable significant reductions in platform vulnerability through the use of remote source lighting, particularly on Naval warships, with a secondary emphasis on enabling improved visual acuity of the warfighter. The technical objective of the program is the demonstration of integrated high efficiency distributed lighting fiber-illuminators characterized by:

<u>Integrated Illuminator Property</u>	<u>Objective</u>
Electrical Efficiency (LPW)	50 minimum, 70 goal
Mass Efficiency (lumens per gm)	2 minimum, 5 goal
Output (lumens)	1000-5000
Color Point	5700-6500 K CCT
Spectrum	D57-D65, full spectrum, white
Luminaire	fiber-integrated

To achieve this objective, offerors should emphasize illumination system or subsystem concepts that may contain high technical risk but if enabled would have commensurate high performance payoff. Technical objective goals for the illumination subsystems are described in the sections below.

Offerors are invited to submit proposals to one or more of the subsystem and integrated illuminator topic areas described below. ***Offerors proposing to multiple areas should submit independent proposals to each area.*** Where synergies between topic areas of work would provide greater value to the government, these synergies and their consequent cost or risk mitigations should be called out in the respective proposals.

The first phase of the effort proposed (base) should support the technical feasibility of the concept. Offerors should propose follow-on phases leading toward technology development. Based upon the success of the base efforts and continued availability of funding, a subset of the selected proposals may have options exercised to initiate the technology development. Success is defined as both the achievement of the stated milestone for the particular phase and the continued projection that the effort will achieve the project end-goal.

TECHNICAL TOPIC AREAS

The program effort is divided into four topical areas consisting of the three subsystems and the integrated illuminator, as shown in Figure 1. The three subsystems are the light source, the optical coupling between the light source and the fiber-luminaire, and the fiber-luminaire. Each of these subsystems, the critical figures of merit, and the minimum and target performance characteristics are detailed in following sections.

An essential figure of merit in all cases is efficiency, including both electrical/optical efficiency and mass efficiency. Also shown in Figure 1 is a time-based progression of program milestones for efficiency, allocated across the three subsystem technologies. Subsystem technology development proposers should align their proposed project milestone plans to meet or exceed the milestone progressions shown in Figure 1.

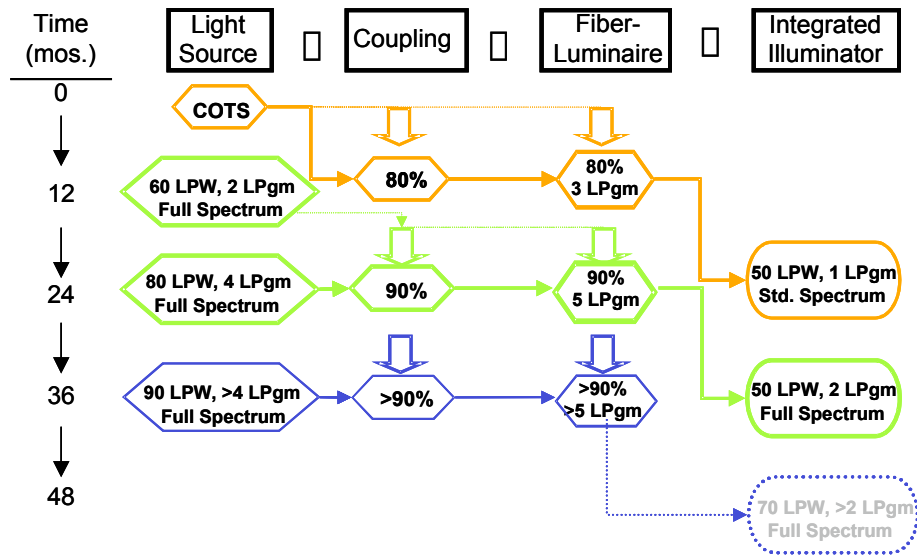


Figure 1: The program flow of fundamental efficiency objectives for the subsystem development efforts. Note the progression of increasing subsystem electrical, optical, and mass efficiency – leading to the integrated illuminator efficiency performance goals on the far right.

Full Spectrum Light Sources:

The light source subsystem comprises those elements that convert platform prime power to light. The desired light source for the HEDLight program features high electrical efficiency, high mass efficiency, D57-D65 full spectrum output, and small optical extent for efficient coupling into optical fiber. The light source performance goals can be summarized as:

Property	Objective
Electrical Efficacy (LPW)	80 (minimum), 90 (goal)
Mass Efficiency (lumens per gm)	4 (minimum), 10 (goal)
Optical Target ($N_A = 0.6$)	1.9 cm ² (max), 1.0 cm ² (goal)
Output Spectrum	1500-3000 lumens per optical target D57-D65, $\pm 10\%$, binned in 10 nm increments, (see below)
Correlated Color Temperature (CCT)	5700-6500 K
Lifetime (80% maintenance, 80 % survival, hours)	100 (minimum), >10,000 (goal)

Efficiency: High efficiency distributed lighting is not feasible without a high efficiency light source, and efficiency in this case only counts that portion of the output that can be coupled to the input of the target distribution system. While the optimized coupling of the light source to the optical fiber distribution is not the responsibility of the light source subsystem developer, it is their responsibility to provide a light source that can be efficiently coupled. Accordingly, both the luminous efficacy and mass efficiency only count those lumens deliverable to an optical target of the stated size and numerical aperture. This accounting may take several forms, including the physical measurement of the optical transfer function from the light source to an appropriate target, the measurement of an industry-standard source model (e.g. Radiant Imaging standard) and subsequent computational analysis, or other equivalent methods that account for both the optical extent and skew of the light source. Finally, the available platform prime power varies widely across DOD platforms. While the light source developer is responsible for operating from platform prime power, they may assume that all of the following are available as prime power sources: 12 VDC, 28 VDC, 32 VDC, 48 VDC, 270 VDC, 120 VAC (60 Hz), and 208 VAC (60 Hz).

Spectrum: The spectral quality of lighting is important to a range of military systems and to Naval vessels in particular. Full spectrum lighting – light containing a balance of spectral components and with no significant range of spectrum missing- is advantaged for a range of vision-related activities. This program targets a spectrum within $\pm 10\%$ of the $D_{57} - D_{65}$ CIE standard illuminants over the range 400-700 nm, averaged over 10 nm increments, while maintaining a correlated color temperature (CCT) between 5700-6500K. The contribution of peaks outside the $\pm 10\%$ envelope around the selected $D_{\#}$ standard illuminant should likewise be deducted from any accounting of efficiency or brightness – corresponding to the effect of an ideal filter. Light sources with void regions of visible spectrum greater than 10nm wide are undesirable.

Lifetime: This program recognizes the difficulty in developing light sources with a lifetime target but an unknown operational environment. The minimum lifetime requirement is established to allow stable characterization of illuminator systems, and to eliminate consideration of light source technologies that are unlikely to be deployed.

Optical Coupling:

The objective of the Optical Coupling subsystem is to couple the greatest possible fraction of the light output from the light source into the smallest target area optical fiber-luminaire, in a manner consistent with long-life stable performance. In so doing, the Optical Coupling subsystem must manage the light in a manner for optimum performance of both the light source and the downstream fiber-luminaire.

The primary metrics of the optical coupling system are optical throughput efficiency and average output brightness achieved in combination with the light sources developed in this program. Secondary metrics include mass, spectral flatness, UV and IR management, and brightness uniformity across the output aperture. In particular, offerors may consider limiting the peak fluence at the fiber entrance to $< 30 \text{ Lm/mm}^2$ to ensure long-term operation with the broadest range of optical fiber materials. Finally, note should be taken of the fabricability, reproducibility, and robustness of optical coupling subsystem components. The optical coupling performance goals can be summarized as:

<u>Property</u>	<u>Objective</u>
Optical Throughput Efficiency	80% (minimum), 90% (goal)
Output Brightness (Cd/mm ²)	10 (minimum), 20 (goal)
Mass (gm)	<200
Spectral Flatness	±5%, 400-700 nm
Brightness Uniformity	±10% to cutoff

Optical Throughput Efficiency: The percentage of light from the light source delivered to one or more optical targets, where an optical target is defined under “Full Spectrum Light Sources,” and where the light input and output are weighted by the most beneficial of the D₅₇ – D₆₅ spectral power distributions. This latter metric is used to ensure that the spectral power balance strived for in the Light Source subsystem development effort is preserved to the greatest extent possible.

Output Brightness: The output lumens divided by the output optical extent, where optical extent is given by $\Omega = \frac{A}{r^2} (\text{output area}) \sin^2(N_A/2)$.

Light Sources: The Fiberstars EFOS solid-core fiber optic lighting system has been selected as a Commercial-Off-The-Shelf (COTS) baseline for the initial development of the optical coupling and fiber-luminaire subsystems. Radiant Imaging source models of the lamp used in the COTS system will be provided. Proposers should indicate the number of systems they require as GFE for their first year (base) development efforts. As indicated in Figure 1, the most promising results of the light source subsystem development efforts will be the focus of the second and third year (optional) development efforts. Again, Radiant Imaging source models of the selected lamps will be provided. Proposers should indicate the number of such light sources required as GFE for these follow-on development efforts.

Fiber-Luminaires:

The fiber-luminaire subsystem accepts the input light from the optical coupling subsystem, transports it up to two meters, and then emits the light over an additional distance of 0.5 – 2 meters at an output rate of ~2500 lumens/meter. In the initial stages of development, the emission target is a Lambertian distribution oriented orthogonal to the transport direction of the fiber (see Figure 2). In the final stage of the development, it is desirable, through means of varying the luminaire substructure, to be able to point the general output of the luminaire at various angles to the transport direction of the fiber.

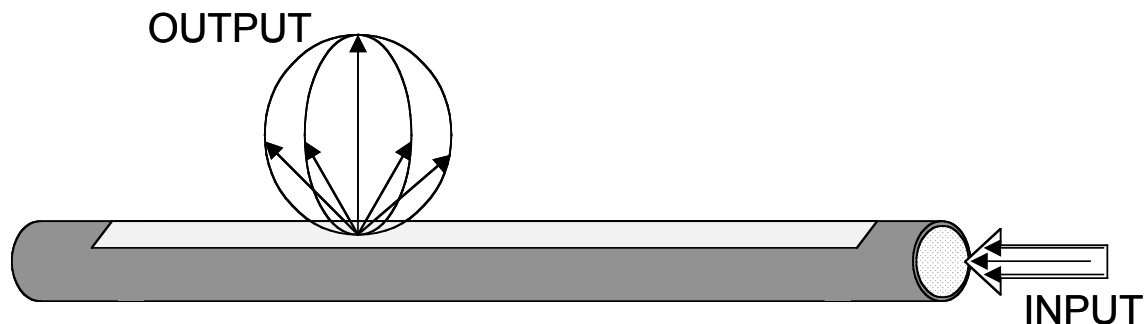


Figure 2: A depiction of the initial desired fiber-luminaire geometry.

The primary metrics of the Fiber-Luminaire subsystem are optical throughput efficiency and mass efficiency. Secondary metrics include output uniformity, output distribution character, and spectral flatness. The Fiber-Luminaire subsystem performance goals can be summarized as:

<u>Property</u>	<u>Objective</u>
Output per Unit Length	1500 – 3000 lumens/meter
Optical Throughput Efficiency	80% (minimum), 90% (goal)
Mass Efficiency (lumens per gram)	5 (minimum), 12 (goal)
Output Uniformity	±10% over length
Output Distribution	Lambertian Compressed Lambertian Steered and Compressed Lambertian
Spectral Flatness	±5%, 400-700 nm

Output per Unit Length: Output lumens from the luminaire divided by the length over which the output is provided. In the case of a multi-strand termination-style fiber-luminaire, the multiple outputs should be arranged linearly with the first output being no nearer the light source than 0.5 meters.

Optical Throughput Efficiency: Total output lumens divided by total lumens illuminating the input target surface. Fresnel losses at the input to the fiber luminaire are the responsibility of the fiber-luminaire.

Mass Efficiency: Total output lumens divided by the mass of the fiber-luminaire.

Output Uniformity: The linear output length is divided into equal length increments, 10-20 cm in length, and each segment is characterized with respect to total luminous output. Output uniformity is characterized by the maximum positive and negative deviations from the mean value.

Output Distribution: The spatial distribution of the output from the luminaire is characterized with respect to angular distribution along the axis of distribution and orthogonal to the axis of distribution, for segments (as described above) at the beginning, middle, and end of the output length.

Spectral Flatness: The normalized SPD for the total luminous output from the last output segment of the luminaire, compared with the normalized SPD of the input light.

Light Sources: As previously stated, the Fiberstars EFOS solid-core fiber optic lighting system has been selected as a Commercial-Off-The-Shelf (COTS) baseline for the initial development of the optical coupling and fiber-luminaire subsystems. Radiant Imaging source models, corresponding to the output from the optical coupling subsystem used in the COTS system, will be provided. Proposers should indicate the number of systems they require as GFE for their first year (base) development efforts. As indicated in Figure 1, the most promising results of the light source subsystem development efforts will be the focus of the second and third year (optional) development efforts. Again, Radiant Imaging source models of the output from the selected optical coupling subsystems will be provided. Proposers should indicate the number of such light sources required as GFE for these follow-on development efforts.

Integrated Illuminators:

The integrated illuminator pulls the light source, optical coupling, and fiber-luminaire subsystems into a tightly coupled and highly efficient illumination system. Significant effort on illumi-

nator integration will follow after the first stage of the subsystem development efforts (see Figure 1). Initial efforts on the integrated illuminator are expected to be modest design and analysis efforts aimed at (1) providing early feedback to the subsystem design efforts on compatible or incompatible subsystem design features, and (2) setting up the framework for the follow-on hardware integration efforts. The program goals of the illuminator integration effort were listed at the beginning of this Proposers' Information Pamphlet:

<u>Integrated Illuminator Property</u>	<u>Objective</u>
Electrical Efficiency (LPW)	50 minimum, 70 goal
Mass Efficiency (lumens per gm)	2 minimum, 5 goal
Output (lumens)	1000-5000
Color Point	5700-6500 K CCT
Spectrum	D57-D65, full spectrum, white
Luminaire	fiber-integrated

A time-sequence of the electrical and mass efficiency goals is outlined in Figure 1.

PROGRAM SCOPE AND FUNDING

As much as \$5M in FY 2003, \$6M in FY 2004, and \$5M in FY 2005 may be available to fund research and development under this BAA. Multiple awards during FY 2003 are anticipated.

SOURCE SELECTION, INITIAL AND SUBSEQUENT

Any responsible offeror may submit a proposal in accordance with the requirements and procedures identified in this BAA. These requirements and procedures include the form and format for proposals. Offerors may be foreign firms or may team with foreign firms as long as the firm meets criteria in this solicitation and the Government is permitted to conduct business with the firm.

Historically Black Colleges and Universities (HBCU) and Minority Institutions (MI) are encouraged to submit proposals, and to join others in submitting proposals; however, no portion of this BAA will be set-aside for HBCUs or MIs because of the impracticality of reserving discrete or severable areas of research and development in the technologies sought.

PROPOSAL SUBMISSION GUIDANCE AND DIRECTION

A typical proposal should express a consolidated effort in support of one of the specified subsystem or integrated illuminator topic areas. Disjointed efforts or efforts addressing multiple topic areas should not be included in a single proposal; offerors, however, may submit multiple proposals.

A "proposal" is the two-volume document that conforms to the form and format requirements specified in this BAA. Other supporting or background materials submitted with proposals will not be considered part of a proposal for the purpose of a proposal's evaluation.

Proposals should be submitted for initial milestone demonstration efforts to be completed within 9-12 months after award. Proposed efforts beyond initial funding period should be included as priced options phased on a milestone-achievement basis and roughly constructed to coincide with the calendar year. Any total effort, including options, shall not exceed three (3) years.

This solicitation will be open until 1600 local time, Tuesday 12 November 2002.

Teaming and cost sharing are acceptable to the extent that they are meaningful and beneficial to the Government.

REQUIRED DELIVERABLES

To be considered under this BAA, the following deliverables are required to be included in any proposal and will subsequently be included in any resulting contract or agreement:

1. Monthly financial reports. The required content of the report will depend on the type of contract or agreement and the cost of the effort.
2. Semi-annual written technical status reports, including a discussion of progress against scheduled milestones and projected capability against the proposed end-goal;
3. Semi-annual technical status meetings at the proposer's place of performance, occurring three months out of phase with the written reports, such that a technical status update is provided to the government one per calendar quarter;
4. A final report at the conclusion of the base period and each succeeding optional phase that is awarded;
5. Within the first twelve (12) months of performance, ten (10) sample units of the proposed subsystem or system meeting the stated interim performance objectives;
6. Within the first twenty-four (24) months of performance, fifty (50) sample units of the proposed subsystem or system meeting the stated interim performance objectives;
7. Transfer Documentation of the designs and processes used in the fabrication of the above fifty sample units;
8. Within the first thirty-six (36) months of performance, two hundred (200) sample units of the proposed subsystem or system meeting the stated final performance objectives;
9. Transfer Documentation of the designs and processes used in the fabrication of the above two hundred prototype units.

DATA RIGHTS

It is the intention of the government that any contract awarded under this BAA will include the standard DOD FAR and DFARS clauses pertaining to intellectual property. Other arrangements on intellectual property may be negotiated under alternative non-contract agreements.

The above statements notwithstanding, it is the objective of this program to develop an advanced lighting technology, provide sufficient prototype units for preliminary evaluations on military platforms, and further to establish a means for the subsequent acquisition of units through standard DOD processes. If the product of the proposed effort constitutes a manufacturable item, Proposers must identify their willingness, capability, and intent to manufacture or have manufactured the resulting item. In the event that the Proposer is unwilling or unable to manufacture or have manufactured the product of the proposed effort, the Proposer shall specify terms under which all the necessary IP and know-how will be made available to other qualified manufacturing entities for subsequent manufacture of items for government use. Proposers indicating their intent to manufacture or have manufactured the product results of the proposed effort should further identify: (1) supporting commercial business areas, (2) additional capital required, if any, to establish the manufacturing base, and (3) non-DOD sources of that capital.

A specific technology transition approach is required for your proposal to be considered for evaluation, and will also be included in any subsequent contractual arrangement. The future availability of a successfully developed technology, as evidenced by the proposer's approach to

technology transition, is one of the principal evaluation metrics. Any proposal that does not include a discussion of the specific technology transition approach will be found non-responsive and will not be evaluated.

PROPOSALS CONTAINING PROPRIETARY DATA

All proposals containing proprietary data should have the cover page and each page containing proprietary data clearly marked as containing proprietary data. It is the Offeror's responsibility to clearly define to the Government what is considered proprietary data.

It is the policy of DARPA and AMCOM to treat all proposals as competitive information, and to disclose their contents only for the purpose of evaluation. Proposals will not be returned. The original of each proposal received will be retained at AMCOM and all other non-required copies destroyed. A certification of destruction may be requested, provided that the formal request is received at the address for proposals within 5 days after unsuccessful notification.

Awards made under this BAA are subject to the provisions of the Federal Acquisition Regulation (FAR) Subpart 9.5, Organizational Conflicts of Interest. All offerors and proposed subcontractors must, therefore, affirm whether they are providing scientific, engineering and technical assistance (SETA), or similar support, to any AMCOM or DARPA technical office(s) through an active contract or subcontract. All affirmations must state which office(s) the offeror supports, and identify the prime contract numbers. Affirmations should be furnished at the time of proposal submission. All facts relevant to the existence or potential existence of organizational conflicts of interest, as that term is defined at FAR 9.501, must be disclosed. The disclosure shall include a description of the action the offeror has taken, or proposes to take, to avoid, neutralize or mitigate such conflict.

The Government intends to use employees and subcontractors of SRS Technologies, Inc. (SRS) of Arlington, Virginia to assist in administering the evaluation of the proposals and to provide advice regarding portions of the technical content of the proposals to the Government evaluators. These personnel will have signed, and will be subject to, the terms and conditions of non-disclosure agreements. By submission of its proposal, an offeror agrees that its proposal information may be disclosed to employees of SRS and its subcontractors for the limited purpose stated above. Only Government evaluators, however, will make technical evaluations and award determinations under this BAA.

All administrative correspondences and questions on this solicitation, including requests for information on how to submit a proposal to this BAA, should be directed to the administrative contact below; e-mail is preferred. DARPA intends to use electronic mail, WWW, and/or fax for correspondence regarding BAA03-##. Proposals may not be submitted by fax or electronically; any so sent will be disregarded.

Submission Dates, Proposals: Proposals must be received by the Procuring Contracting Officer (PCO), no later than 16:00 Central Standard Time (CST), Tuesday, 12 November 2002. Proposals must be submitted to the U.S. Army Aviation and Missile Command, ATTN: AMSAM-AC-RD-AY/Ms. Adina B. Peyton, Building 5400, West Entrance, Redstone Arsenal, Alabama 35898-5280. Interested contractors MUST insure that their proposals are received at the above address by the designated time for their proposals to be accepted. Due to heightened security contractors need to use mail services that will ensure packages are received by the time and date in the BAA.

Submission Format, Proposals: Proposals must be submitted in hard copy, including an original and five (numbered 1 through 5) copies. Contractors shall also submit an electronic copy of their technical and cost proposal in MS-Word, Excel or WP Format on any of the following media: 3.5” diskette, 100 MB ZIP Disk, or CD-ROM. **Contractors are also requested to send one copy of their cost proposal to their cognizant DCAA, if known. Contractor’s proposed rates shall be verified by DCAA. To locate your cognizant DCAA, please email Ms. Adina B. Peyton at hedlight@dpo.redstone.army.mil.**

Following the completion of proposal evaluations, offerors will be notified that: 1) its proposal has been accepted and the effort will be funded, or 2) its proposal has not been accepted. Unless otherwise advised by the offeror at the time of submission, copies of non-accepted proposals will be destroyed; however, the original of non-accepted proposals will be retained and filed.

Proposals identified for funding may result in a procurement contract, grant, cooperative agreement, technology investment agreement, or other transaction for prototypes. This will depend upon the nature of the work proposed, the required degree of interaction between parties, and other factors. If warranted, portions of resulting awards may be segregated into pre-priced options.

PROPOSAL FORMAT

All proposals must be in the following format; nonconforming proposals may be rejected without review.

Proposals shall consist of two separate volumes, three-hole punched and bound only in the upper left corner. All pages shall be printed on normal-weight 8-1/2 by 11 inch paper with type not smaller than 12 point. Double-sized 11 by 17 inch paper may be used where appropriate, but each 11 by 17 inch page counts as two pages against the page count. Do not add card-stock or protective covers. The page limitation for proposals includes all figures, tables, and charts. Volume I, Technical and Management Proposal, may include an attached bibliography of relevant technical papers or research notes (published and unpublished), which document the technical ideas and approach upon which the proposal is based. Copies of not more than three (3) relevant papers can be included with the submission. The bibliography and attached papers are not included in the page counts given below. The submission of other supporting materials along with the proposal is strongly discouraged and will not be considered for review.

Volume I shall not exceed thirty-five (35) pages. The page count of the “Statement of Work and Deliverables” section is not counted in this total, nor is the attached Bibliography.

Suggested page lengths for each section are shown in braces { } below. Each numbered section must start on a new page.

Offerors must submit an original and five (5) copies of the proposals. Annotate each set in the upper right corner of the first page with “original,” or copy 1-5. Offerors must also submit an electronic copy of the proposal in MS Word or WP format on 3.5” diskette, 100 MB ZIP disk, or CD-ROM media.

Volume I, Technical and Management Proposal (Not to exceed 35 pages)

{1} Cover sheet to include:

- (1) BAA number;
- (2) Technical topic area;

- (3) Lead Organization Submitting proposal;
- (4) Type of business, selected among the following categories: "LARGE BUSINESS," "SMALL DISADVANTAGED BUSINESS," "OTHER SMALL BUSINESS," "HBCU," "MI," "OTHER EDUCATIONAL," or "OTHER NONPROFIT";
- (5) Contractor's reference number (if any);
- (6) Other team members (if applicable) and type of business for each;
- (7) Proposal title;
- (8) Technical point of contact to include: salutation, last name, first name, street address, city, state, zip code, telephone, fax (if available), electronic mail (if available); and
- (9) Administrative point of contact to include: salutation, last name, first name, street address, city, state, zip code, telephone, fax (if available), electronic mail (if available).

{1} Official transmittal letter.

1. Executive Summary {2}

The Executive Summary should provide the reader with the high points of the proposed effort, including the cost of the base effort and total project, projected outcome as compared with the stated need, technical approach and key risk items, and the means through which the results of the successful project will be made available to future government development or acquisition efforts.

2. Technology Overview {5}

This section is comprised of three subsections:

2.A Expected Outcome {0.5 – 1}

The expected outcome of this work compared with the stated subsystem or system performance needs. Performance characteristics may be compared in simple tabular format. Exceptional capabilities should be noted. Expected outcomes that fall short of the stated goals should be briefly explained.

2.B Current Technology {1.5 – 2.5}

Review the shortfalls of currently available technology in their capability to meet the stated need.

2.C Capabilities of the Proposed Technology {1.5 – 3}

Describe the key technical innovations embodied in the proposed technology and how it can meet or exceed the stated performance needs. Where appropriate, describe additional future capabilities or opportunities that will result from the successful outcome. If necessary, review in greater depth any expected outcomes that fall short of the stated performance goals and suggest any opportunities or timelines that may be appropriate for addressing these shortfalls.

3. Technical Rationale {4}

Describe why the technology is the one that is best suited to addressing the stated needs. Describe the risks that could affect the success of the proposed project, and characterize them with respect to cost, schedule, or performance risk. Outline the project risk mitigation plan. Projects should be structured to address the highest "go / no-go" risks first. Identify the "go / no-go" risks and which milestones indicate their having been successfully addressed?

4. Technical Approach {4}

Provide a detailed description of the project technical approach including project organization, task descriptions, and specialized measurement, fabrication, or computational techniques.

5. Technology Transition Approach {2}

Describe how the results of the project will be made available to future integration and application efforts. Two elements are of critical interest within the scope of this program: (1) how sufficient quantities of units will be made available for subsequent illuminator integration or application demonstration efforts, and (2) how, in success, future subsystem or illuminator DOD acquisition needs can be addressed. If the product of the proposed effort constitutes a manufacturable item, Proposers should identify their willingness, capability, and intent to manufacture or have manufactured the resulting item – or alternatively, proposed terms under which all the necessary IP and know-how will be made available to other qualified manufacturing entities for subsequent manufacture of items for government use. Proposers indicating their intent to manufacture or have manufactured the product results of the proposed effort should further identify: (1) supporting commercial business areas, (2) additional capital required, if any, to establish the manufacturing base, and (3) non-DOD sources of that capital.

6. Schedule, Milestones, and Deliverables {3}

Include a detailed schedule for the proposed effort including the base effort and all proposed option efforts, and including a series of milestones that track the major progress steps, “go / no-go” decision points, and key deliverables of the project. Separately describe the decision path for each “go / no-go” milestone and the risk mitigation efforts that will have been executed leading up to those decision points. Key deliverables, as applicable, include hardware, industry-standard device models, design summaries, major technical reports, and major technology transition actions.

7. Relevant Experience {3}

Review the relevant experience of the proposing organization. Where appropriate, cite prior or current relevant government contracting efforts including contract number, funding organization, contracting organization, cognizant contract monitor, funding, and relevance. Include successful technology transition activities by the proposing organization, if available.

8. Personnel {4}

List the Key Personnel for the proposed effort and include brief resumes for each. Show an organization chart for the project and indicate the line of responsibility to a cognizant Corporate Responsible Official. Include a staffing matrix indicating key personnel and staffing category hours by task for the base effort and by project phase and calendar year for the entire project.

9. Facilities {4}

Describe the facilities that will be used for the proposed effort.

10. Cost Summary {2}

Provide a table that summarizes the costs of the proposed project at the task level by phase and by calendar year. Provide a notional costing for the DOD acquisition of the successful product as a single buy of 500 units and repeated buys of 5,000 units per month.

11. Statement of Work and Deliverables {Not included in page count}

A Statement of Work for the project, in plain English, outlining the scope of the effort and citing specific tasks to be performed and specific contractor requirements. Separately number the pages of this section (e.g. “S1, S2” or “i, ii, iii, ...”).

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- 1) A cover sheet to include: (1) Name and address of offeror (*include zip code*); (2) Name, title, and telephone number of Offeror’s point of contact; (3) Award instrument requested: cost-plus-fixed-fee (CPFF), cost-contract--no fee, cost sharing contract--no fee, or other type of procurement contract (*specify*), grant, or agreement; (4) Place(s) and period(s) of performance; (5) Total proposed cost separated by basic award and option(s) (if any); (6) Name, address, and telephone number of the Offeror’s cognizant Defense Contract Management Command (DCMC) administration office (*if known*); and (7) Name, address, and telephone number of the Offeror’s cognizant Defense Contract Audit Agency (DCAA) audit office (*if known*).
- 2) Detailed cost breakdown to include: (1) total program cost broken down by major cost items (direct labor, subcontracts, materials, travel, other direct costs, overhead charges, etc.) and further broken down by Government Fiscal Year (GFY); (2) major program tasks by GFY; (3) an itemization of major subcontracts (labor, travel, materials and other direct costs) and equipment purchases; (4) a summary of projected funding requirements by month; and (5) the source, nature, and amount of any industry cost-sharing. Where the effort consists of multiple portions that could reasonably be partitioned for purposes of funding, these should be identified as options with separate cost estimates for each.
- 3) Supporting cost and pricing information in sufficient detail to substantiate the summary cost estimates in B. above. Include a description of the method used to estimate costs and supporting documentation. Provide the basis of estimate for all proposed labor rates, indirect costs, overhead costs, other direct costs and materials, as applicable. If proposed rates are approved by your cognizant DCMA/C, please provide a copy of the approval documentation. **Before award, contractor must first be approved by DCAA as having a cost accounting system that is acceptable for a cost-type contract if this is the contracting type vehicle that they are proposing. Contractor may contact his local DCAA for guidance on this matter or contact Ms. Adina Peyton for more information.**

EVALUATION CRITERIA

The evaluation of proposals will be accomplished through a technical review of each proposal using the following criteria. The first three criteria are of equal and principal importance; the remaining criteria are listed in descending order of importance:

- 1) Overall scientific and technical merit of proposed approach, soundness of proposed work, probability of success;
- 2) Contribution and relevance of the proposed work to achieving the stated system and subsystem performance objectives;
- 3) Approach to technology transition, and capability and likelihood of transitioning the technology to the industrial manufacturing and operational military communities in such a way as to enhance U.S. defense;
- 4) Offeror's Capabilities and Related Experience to perform the stated work will be examined. In particular, the qualifications of Principal Investigators will be considered. The range, depth, and mix of expertise of the Offeror's key personnel will be evaluated to ensure that they are qualified in the theory and application of the technologies involved in the development, testing, and evaluation of the proposed technology. Reasonableness of schedules, level of planning, and management performance at each stage of the project will be evaluated to ensure they are appropriate for the proposed research;
- 5) Cost Realism will be evaluated to determine whether the Offeror's estimate is reasonable and realistic for the technical and management approach offered, as well as to determine the Offeror's practical understanding of the effort. This will be principally measured by cost per labor-hour and number of labor-hours proposed. Cost reduction approaches that will be received favorably include innovative management concepts that maximize direct funding for technology and limit diversion of funds into overhead.

ADMINISTRATION

The applicable addresses for this BAA are:

Administrative Contact:

Phone: (256) 842-7408 Electronic Mail: hedlight@dpo.redstone.army.mil
Fax: (256) 876-7600 (Addressed to: Ms. Peyton, BAA DAAH01-02-R-RB04)

Address for Proposals:

U.S. Army Aviation and Missile Command
ATTN: AMSAM-AC-RD-AY/Ms. Adina B. Peyton
Building 5400, West Entrance
Redstone Arsenal, Alabama 35898-5280